DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE (IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2017-04-12-01** **Date: 15-04-17**
Customer	:	Assistant Executive Engineer, Yelahanka Satellite Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Satellite Sub Division, BBMP, Bangalore.
Project Name	:	Asphalting to Roads and improvements to drains in Akshayanagra 1st Main and cross roads of Attur Ward No.03
Agency	:	Technical Manager(West), KRIDL, BBMP, Bangalore.
Customer Reference	:	BBMP/EE(YNK.D)/W.O/140/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	12-04-17
Sample ID No	:	2017-04-12-01/01
Type of Mix	:	Coarse Aggregate for DBM (Dense Bituminous Macadam)
Date of test	:	13-04-17

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 500-8
Flakiness Index	12.5%	Combined Flakiness & Elongation Index for DBM is Maximum 35%
Elongation Index	11.9%	
Combined Flakiness and Elongation Index for DBM	24.4%	

Note:-
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All information furnished by Customer
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SPECIFIC GRAVITY AND WATER ABSORPTION TEST
IS:2386 Part III

Lab ID : CP-RW-2017-04-12-01

Customer : Assistant Executive Engineer, Yelahanka Satellite Sub Division, BBMP, Bangalore.

Date: 15-04-17

Address : Yelahanka Satellite Sub Division, BBMP, Bangalore.

Agency : Technical Manager(West), KRIDL, BBMP, Bangalore.

Project Name : Asphalting to Roads and improvements to drains in Akshayanagra 1st Main and cross roads of Attur Ward No.04

Customer Reference : BBMP/EE(YNK.D)/W.O/140/2017-18

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 12-04-17

Sample ID No : 2017-04-12-01/01

Type of Mix : Coarse Aggregate for DBM (Dense Bituminous Macadam)

Date of test : 13-04-17

Sl.No	Details of Observations	Index	Unit	Test 1	Test 2	Mean Value
218	Weight of Wet aggregates + Basket suspended in water	A1	grams	2182	2146	
2	Weight of Empty Basket suspended in water	A2	grams	791	728	
3	Weight of Aggregates in water	A=A1-A2	grams	1391	1418	
4	Weight of Saturated Surface Dry aggregate	B	grams	2265	2318	
5	Weight of oven dried aggregate	C	grams	2260	2312	
6	Specific gravity	C/(B-A)		2.59	2.57	2.58
7	Apparent Specific gravity	C/(C-A)		2.60	2.59	2.59
8	Water absorption	100*(B-C) /C	Percent	0.22	0.26	0.24

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2017-04-12-03** **Date: 15-04-17**
Customer	:	Assistant Executive Engineer, Yelahanka Satellite Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Satellite Sub Division, BBMP, Bangalore.
Agency	:	Technical Manager(West), KRIDL, BBMP, Bangalore.
Project Name	:	Asphalting to Roads and improvements to drains in Akshayanagra 1st Main and cross roads of Attur Ward No.04
Customer Reference	:	BBMP/EE(YNK.D)/W.O/140/2017-18
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	12-04-17
Sample ID No	:	2017-04-12-03/01
Type of Mix	:	DBM (Dense Bituminous Mecadam)
Date of test	:	12-04-17

The results of the tests conducted on the Dense Bituminous Mecadam mix sample are as follow

SLNo	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.03	9KN(min)
2	Marshal flow at 60°C, mm	3.52	3.61	2-4
3	Percent air Voids	4.82	4.73	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.16	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	70.63	65-75
6	Density, g/cc	2.36	2.37	–

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : CP-RW-2017-04-12-01 **Date: 15-04-17**

Customer : Assistant Executive Engineer, Yelahanka Satellite Sub Division, BBMP, Bangalore.

Address : Yelahanka Satellite Sub Division, BBMP, Bangalore.

Project Name : Asphalting to Roads and improvements to drains in Akshayanagra 1st Main and cross roads of Attur Ward No.03

Agency : Technical Manager(West), KRIDL, BBMP, Bangalore.

Customer Reference : BBMP/EE(YNK.D)/W.O/140/2017-18

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 12-04-17

Sample ID No : 2017-04-12-01/01

Type of Mix : DBM(Dense Bituminous Macadam)

Date of test : 12-04-17

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	CP-RW-2017-04-20-01
		Date: 22-04-17
Customer	:	Assistant Executive Engineer, Yelahanka Satellite Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Satellite Sub Division, BBMP, Bangalore.
Project Name	:	Asphalting to Roads and improvements to drains in Akshayanagra 1st Main and cross roads of Attur Ward No.03
Agency	:	Technical Manager(West), KRIDL, BBMP, Bangalore.
Customer Reference	:	BBMP/EE(YNK.D)/W.O/140/2017-18
Source of Sample	:	Sample supplied by Agency
Date of Receipt	:	20-04-17
Sample ID No	:	2017-04-20-01/01
Type of Mix	:	DBM (Dense Bituminous Macadam)
Date of test	:	20-04-17

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	502	502
2	Weight of the sample After extraction	B	477	478
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.98	4.78
4	Average percentage	%	4.9	

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Lab ID

Sample ID No : CP-RW-2017-04-20-01

: 2017-04-20-01/01

Date: 22-04-17

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 477

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	0	0	0.00	100.0	90-100
19	28	28	5.87	94.1	71-95
13.2	117	145	30.40	69.6	56-80
4.75	143	288	60.38	39.6	38-54
2.36	48	336	70.44	29.6	28-42
0.3	56	392	82.18	17.8	7-21
0.075	61	453	94.97	5.0	2-8

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 478

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	0	0	0.00	100.0	90-100
19	43	43	9.00	91.0	71-95
13.2	87	130	27.20	72.8	56-80
4.75	152	282	59.00	41.0	38-54
2.36	55	337	70.50	29.5	28-42
0.3	71	408	85.36	14.6	7-21
0.075	43	451	94.35	5.6	2-8

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TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part I) 1963 (RA2011)

Lab ID	:	CP-RW-2017-04-20-02
Customer	:	Assistant Executive Engineer, Yelahanka Satellite Sub Division, BBMP, Bangalore.
Address	:	Yelahanka Satellite Sub Division, BBMP, Bangalore.
Project Name	:	Asphalting to Roads and improvements to drains in Akshayanagra 1st Main and cross roads of Attur Ward No.03
Agency	:	Technical Manager(West), KRIDL, BBMP, Bangalore.
Customer Reference	:	BBMP/EE(YNK.D)/W.O/140/2017-18
Source of Sample	:	Sample supplied by Agency
Date of Receipt	:	20-04-17
Sample ID No	:	2017-04-20-02/01
Type of Mix	:	DBM (Dense Bituminous Macadam)
Date of test	:	20-04-17

Date: 22-04-17

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	501	500
2	Weight of the sample After extraction	B	476	475
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.99	5.00
4	Average percentage	%	5.0	

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Lab ID

Sample ID No : CP-RW-2017-04-20-02

: 2017-04-20-02/01

Date: 22-04-17

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 476

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	2	2	0.42	99.6	90-100
19	32	34	7.14	92.9	71-95
13.2	107	141	29.62	70.4	56-80
4.75	149	290	60.92	39.1	38-54
2.36	40	330	69.33	30.7	28-42
0.3	51	381	80.04	20.0	7-21
0.075	78	459	96.43	3.6	2-8

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 475

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0	100.0	100
26.5	3	3	0.63	99.4	90-100
19	39	42	8.84	91.2	71-95
13.2	115	157	33.05	66.9	56-80
4.75	130	287	60.42	39.6	38-54
2.36	43	330	69.47	30.5	28-42
0.3	82	412	86.74	13.3	7-21
0.075	44	456	96.00	4.0	2-8

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